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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,011	12/20/2005	Ashutosh Joshi	0-05-106	9060
7590 Kevin D McCarthy Roach Brown McCarthy & Gruber 1620 Liberty Building Buffalo, NY 14202			EXAMINER WONG, EDNA	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 10/12/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/541,011

Applicant(s)

JOSHI ET AL.

Examiner

Edna Wong

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-6 and 8-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6 and 8-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 25, 2007 has been entered.

This is in response to the Amendment dated September 25, 2007. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Response to Arguments

Claim Rejections - 35 USC § 103

I. Claims 1-17 have been rejected under 35 U.S.C. 103(a) as being unpatentable over **CS 274995** ('995) in combination with **Parrish** (US Patent No. 6,793,903 B1).

With regards to claims **3 and 7**, the rejection under 35 U.S.C. 103(a) as being unpatentable over CS 274995 ('995) in combination with Parrish has been withdrawn in view of Applicants' amendment. Claims 3 and 7 have been cancelled.

With regards to claims **1-2, 4-6 and 8-17**, the rejection under 35 U.S.C. 103(a) as being unpatentable over CS 274995 ('995) in combination with Parrish is as applied in

the Office Actions dated November 21, 2006 and June 14, 2007 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that it is unambiguously not the case when considering the instant application with respect to combining the two technologies described in CS '995 and Parrish; said technologies cannot, under any circumstances, solve the problem which is at the core of the instant invention.

In response, the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by the Applicants. *In re Linter* 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), *cert. denied*, 500 US 904 (1991); and MPEP § 2144.

Applicants state that there is no apparent motivation for one of ordinary skill in the art to either modify a technology for nitrogen oxide removal from power plants (Parrish) or the technology for removal of heavy metal bounded complexes from wastewater (CS '995) in order to produce an aqueous biocidal environment which is at the heart of the instant invention.

In response, the method disclosed by the primary reference CS '995 is the method being modified by a disclosure in Parrish. It is the photocatalyst disclosed by CS '995 that is being modified by the catalyst disclosed by Parrish. It is the substitution of

Art Unit: 1795

the photocatalyst disclosed by CS '995 with the catalyst disclosed by Parrish. It is the substitution of the Fe^{+2} and Cu^{2+} disclosed by CS '955 with the MgO disclosed by Parrish.

Although CS '995 does not disclose that hydroxyl radicals (OH^{\bullet}) are generated by the method, there is no reason why the modification of the method of CS '995 with Parrish would not have generated hydroxyl radicals (OH^{\bullet}), which would have produced an aqueous biocidal environment.

The substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. *In re Fount* USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. V. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

Furthermore, it has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination (MPEP § 2144.06 and § 2144.07).

Applicants state that the feature of powdered MgO suspended in liquid phase is a limitation not anticipated by prior art, and even in hindsight not perceptible there.

In response, "**powdered** MgO " is not presently claimed. It is well settled that unpatented claims are given the broadest, most reasonable interpretation and that limitations are not read into the claims without a proper claim basis therefor. *In re Prater* 415 F. 2d 1393, 162 USPQ 541 (CCPA 1969); *In re Zeltz* 893 F. 2d 319, 13 USPQ

Art Unit: 1795

1320.

Unless MgO is naturally a solid powder.

CS '995 teaches Fe⁺², Cu²⁺ or Ni⁺² **ions** as photocatalysts (abstract).

Parrish teaches that a catalytic coating composed of a variety of compound including, but not limited to, Fe(II), Fe(III), Cr(II), Cu(II), Pt black, Ag, Pd or oxides surfaces, such as **metal oxides**, glass, quartz, Mo glass, Fe₃-xMN_xO₄ spinels, Fe₂O₃ with Cu ferrite, MgO and Al₂O₃ (col. 3, lines 23-35).

Since MgO does not exist as ions, the substitution of the Fe⁺² and Cu²⁺ disclosed by CS '955 with the MgO disclosed by Parrish would have made a MgO suspended in liquid phase.

Applicants state that the use of Parrish's invention necessitates enriched hydrogen peroxide solution which impinges a surface heated up to 500°C, and such conditions would be impractical and even impossible for the instant applications.

In response, the method disclosed by CS '995 already has hydrogen peroxide as an additive in the aqueous solutions. The method disclosed by CS '995 does not use the enriched hydrogen peroxide solution disclosed by Parrish.

Applicants state that regardless of whether the hydrogen peroxide is in solution or gaseous phase when it impinges a surface heated up to 500°C, inevitably hydroxyl radicals will be formed in a gaseous phase in contrast with the instant invention wherein

Art Unit: 1795

the hydroxyl radicals are in a liquid phase throughout the specified process.

In response, CS '995 teaches using H_2O_2 as an initiating additive (abstract).

Wouldn't hydroxyl radicals, inevitably, be formed by the UV irradiation of the H_2O_2 ? CS '995 teaches irradiating aqueous solutions (abstract).

Applicants state that one having ordinary skill in the art would have recognized that UV irradiation which occurs at ambient temperatures, generating imperceptible heat, cannot be compared to Parrish method pumping heat to the system via a surface heated up to 500°C .

In response, it is the substitution of the Fe^{+2} and Cu^{2+} disclosed by CS '955 with the MgO disclosed by Parrish that the Examiner rejects over obviousness. Does MgO require heat up to 500°C to function? Can MgO function under the UV irradiation alone as disclosed in the method of CS '995?

Applicants state that CS '995 teaches photochemical degradation of complexing agents such as disodium EDTA (page 1, line 1). No radicals are mentioned there, and hydrogen peroxide is not even an essential part of the technique, as seen in Examples 1-3, 5, 6, and 8-10 which do not employ peroxide but attain the desired results.

In response, disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments (MPEP § 2123 (II)).

Furthermore, there is no requirement that the motivation to make the combination be expressly articulated in one or more of the references. The teaching, suggestion or inference can be found not only in the references but also from knowledge generally available to one of ordinary skill in the art. *Ashland Oil v. Delta Resins* 227 USPQ 657 (CAFC 1985). The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin* 170 USPQ 209 (CCPA 1971); *In re Rosselet* 146 USPQ 183 (CCPA 1960). References are evaluated by what they collectively suggest to one versed in the art, rather than by their specific disclosures. *In re Simon* 174 USPQ 114 (CCPA 1972); *In re Richman* 165 USPQ 509, 514 (CCPA 1970).

Applicants state that they do not agree the Examiner's assertion that the consistence of magnesium oxide in claim 1 is open to being suspended on support (last two lines on page 5) because it would have been unambiguously clear to any one having ordinary skill in the art that the catalyst is suspended in a liquid mixture.

In response, it is well settled that unpatented claims are given the broadest, most reasonable interpretation and that limitations are not read into the claims without a proper claim basis therefor. *In re Prater* 415 F. 2d 1393, 162 USPQ 541 (CCPA 1969); *In re Zeltz* 893 F. 2d 319, 13 USPQ 1320.

Is MgO naturally a solid powder?

CS '995 teaches Fe⁺², Cu²⁺ or Ni⁺² **ions** as photocatalysts (abstract).

Art Unit: 1795

Parrish teaches that a catalytic coating composed of a variety of compound including, but not limited to, Fe(II), Fe(III), Cr(II), Cu(II), Pt black, Ag, Pd or oxides surfaces, such as **metal oxides**, glass, quartz, Mo glass, $\text{Fe}_3\text{-xMN}_x\text{O}_4$ spinels, Fe_2O_3 with Cu ferrite, MgO and Al_2O_3 (col. 3, lines 23-35).

Since MgO does not exist as ions, the substitution of the Fe^{+2} and Cu^{2+} disclosed by CS '955 with the MgO disclosed by Parrish would have made a MgO suspended in liquid phase.

II. Claim 18 has been rejected under 35 U.S.C. 103(a) as being unpatentable over **CS 274995** ('995) in combination with **Parrish** (US Patent No. 6,793,903 B1) as applied to claims 1-17 above, and further in view of **DD 51638** ('638).

The rejection of claim 18 under 35 U.S.C. 103(a) as being unpatentable over CS 274995 ('995) in combination with Parrish as applied to claims 1-17 above, and further in view of DD 51638 ('638) is as applied in the Office Actions dated November 21, 2006 and June 14, 2007 and incorporated herein. The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

Response to Amendment

Claim Objections

Art Unit: 1795

Claim 1 is objected to because of the following informalities:

Claim 1

line 2, the word "biocidical" should be amended to the word -- biocidal --. See claim 12, line 2.

line 7, the word "added" should be amended to the word -- supplied --. See claim 1, line 6.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

I. Claims 1-2, 4-6 and 8-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1

lines 6-7, recites "as a catalyst suspended in liquid phase".

Applicants' specification, pages 1-10, does not mention a catalyst suspended in a liquid phase. Thus, there is insufficient written description to inform a skilled artisan that applicant was in possession of the claimed invention as a whole at the time the

application was filed.

The Examiner has carefully considered the entire specification as originally filed, however, there is found no literal support in the specification for the newly added limitations in amended claim 1. Applicants have not provided the page number and line numbers from the specification as to where the newly added limitations are coming from. *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983) *aff'd mem.* 738 F.2d 453 (Fed. Cir. 1984).

II. Claims 11-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11

line 2, it appears that the "radicals" are the same as the hydroxyl radicals (OH^{*}) recited in claim 1, lines 1-2. However, it is unclear if they are. If they are, then it is suggested that the words -- the hydroxyl -- be inserted after the word "of". See also claim 12, line 1, and claim 16, line 1. If they are not, then what is the relationship between the radicals and the hydroxyl radicals (OH^{*})?

Claim 17

line 1, it appears that the "generated radicals" are the same as the generated hydroxyl radicals (OH^{*}) recited in claim 1, lines 1-2. However, it is unclear if they are. If

Art Unit: 1795

they are, then it is suggested that the words -- the -- be inserted after the word "wherein" and the word -- hydroxyl -- be inserted after the word "generated". If they are not, then what is the relationship between the generated radicals and the generated hydroxyl radicals (OH^{\bullet})?

Claim 18

line 1, "said chemical method" lacks antecedent basis.

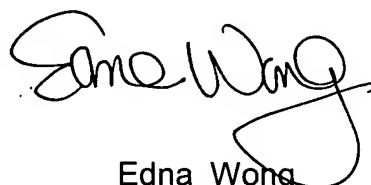
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Art Unit: 1795

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Edna Wong". The signature is fluid and cursive, with the first name "Edna" and last name "Wong" clearly distinguishable.

Edna Wong
Primary Examiner
Art Unit 1795

EW
October 10, 2007